IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NORTH DAKOTA
SOUTHWESTERN DIVISION

MKB MANAGEMENT CORP., et al., **Plaintiffs,**	
vs.	**Declaration and Expert Report of Priscilla K. Coleman, PhD**
BIRCH BURDICK, et al., **Defendants.**	**Case No. 1:13-cv-071**

Priscilla K. Coleman, PhD declares and states the following:

I. Introduction, Professional Background and Credentials

1. I was retained by the Office of the Attorney General, Civil Litigation Division as an expert witness on behalf of the State of North Dakota in defense of House Bill 1456. In my opinion, within reasonable scientific and psychological certainty, the provisions of HB 1456 are prudent and necessary to protect women from the well substantiated risks associated with abortion. Pertinent to my analysis are the following specific areas of inquiry within the broader literature on abortion-related psychological morbidity and mortality: 1) maternal-fetal attachment early in pregnancy; 2) maternal psychological benefits of childbirth and maternal loss associated with abortion; 3) evidence that maternity does not block women's abilities to pursue educational and occupational goals; 4) the increased risk of adverse psychological outcomes associated with abortion compared to childbirth; 5) the elevated risk of intimate-partner relationship problems and parenting difficulties associated with abortion history; 6) the association between risk factors that are suggestive of a woman' desire to continue the pregnancy and negative post-abortion

adjustment; and 7) the relative risk of death associated with abortion compared to childbirth.

2. I am a developmental psychologist and a Professor of Human Development and Family Studies (HDFS) at Bowling Green State University (BGSU) in Ohio, where I have been employed full-time for the past 11 years. I received promotion to Associate Professor with tenure in 2005, and in 2010, I was promoted to the rank of Full Professor. As a faculty member in HDFS, I am responsible for teaching the following undergraduate courses: Child Development, Life-Span Development, Parenting Processes, and Research Methods. I also advise approximately 50-100 students enrolled in the HDFS and Early Childhood Education (ECE) majors each year, and I serve on various committees at the program, school, college, and university levels at BGSU. I have a B.A. in psychology, an M.A. in general psychology and a Ph.D. in life-span developmental psychology.

3. I have published over 50 peer-reviewed scientific articles, of which 37 are on the psychology of abortion. Based on my expertise and the fact that I have published more peer-reviewed studies on abortion and mental health than any other researcher in the world, I am often called upon to serve as a content expert in state and civil cases involving abortion. I have given presentations in parliament houses in Great Britain, Northern Ireland, New South Wales, and Queensland. I have testified before state legislative bodies and a US Congress committee. I currently serve on the editorial boards for five international psychology and medicine journals. A complete listing of my academic and professional background, which includes peer-reviewed

publications on the psychology of abortion, is contained in my Curriculum Vitae, which is attached to this report (see **Exhibit A**).

4. The opinions expressed in this report are to a reasonable degree of scientific and medical certainty and are based on my education, professional experience, the psychological research I have conducted, and my extensive and ongoing review of the abortion and mental health literature. The references to peer-reviewed publications provided in this report have been formative in shaping my opinions on the issues I address, as have other publications too numerous to mention in my ongoing review of the scientific literature.

II. Statement of Opinions and the Basis Therefore

A. Introduction

1. I provide these opinions in opposition to Plaintiffs' Motion for Summary Judgment against enforcement of North Dakota House Bill 1456, now codified at North Dakota Century Code Sections 14-02.1-05.1 14-02.1-05.2 and 43-17-31. As I understand, North Dakota's HB 1456 prohibits an abortion[1] if the unborn child[2] the pregnant woman is carrying has a detectable heartbeat, absent certain exceptions such as to

[1] In referring to an "abortion," I am employing the definition found in N.D.C.C. § 14-02.1-02(1), an induced termination of a clinically diagnosed intrauterine pregnancy of a woman with knowledge that the termination will with reasonable likelihood cause the death of the unborn child.

[2] I may sometimes refer to the term "unborn child," which shall have the same meaning as that term is defined in N.D.C.C. § 14-02.1-02(18), the offspring of human beings from conception until birth.

prevent the death of a pregnant woman, to prevent a serious risk of the substantial and irreversible impairment of a major bodily function of the pregnant woman, or to save the life of an unborn child. In addition to the obvious benefit of protecting human life, HB 1456 will directly benefit the psychological well-being of women of reproductive age in the state. With fewer abortions occurring, fewer women will be at risk for mental health problems, conflicted relationships, and premature death.

2. Research indicates that many pregnant women experience attachment to their unborn children very early in pregnancy. When an abortion occurs in the presence of an established bond between mother and child, particularly once a heartbeat is detected and the child's presence is more salient, the level of psychological distress is likely to be profoundly high. The available research indicates that there are a number of other demographic, situational, and relational factors that elevate a woman's chances of experiencing abortion as traumatic, leading to mental health declines. The specific variables with the most empirical support are reviewed later in this report.

3. Pertinent to the argument that abortion is not in women's best interest once a heartbeat is detected is the mounting evidence suggesting childbirth does not deter the educational and professional goals of contemporary women. In fact, the vast majority of mothers residing in the U.S. are actively engaged at home and in the workplace. Not only are more mothers working than ever before in history, but the presence of women in traditionally male-dominated fields and in positions of leadership have grown exponentially. Similar to men in our society, women do not and should not

have to sacrifice their children and suffer from associated distress in order to fulfill other life dreams.

B. Maternal-Fetal Attachment Early in Pregnancy

4. Motherhood is both a biological and a psychological experience that begins in pregnancy, and it is by nature designed to promote a mutually affirming bond, with benefits to both mother and child. This process forms the basis and preparation for a life-long relationship. When a mother's relationship with her child is terminated by an abortion, the mother loses all the joy and benefits of maternity, and she has a heightened risk for experiencing serious adverse psychological reactions to the loss.

5. Maternal-fetal attachment (MFA) has been studied for more than 3 decades and was originally defined by Cranley (1981) as: *"The extent to which women engage in behaviors that represent affiliation and interaction with the unborn child."* Condon (1986; 1987) described MFA with reference to closeness, tenderness, pleasure in interaction, distress at fantasized loss, conceptualization of the unborn child as a little person, and the intensity of preoccupation (time spent thinking about, talking to, dreaming about, or palpating the unborn child).

6. Research indicates that only 8% of women experience little attachment to the unborn child during pregnancy or actually feel a range of hostile or aggressive emotions directed at the unborn child (Condon, 1986; Condon, 1987). Among the vast majority of women who experience attachment to the unborn child, many women report such a bond very early in pregnancy (Leifer, 1977; Peppers & Knapp, 1980). Available evidence from the scientific literature indicates that high and low risk pregnant

women report comparable levels of prenatal attachment (e.g., Kemp & Page, 1987; Mercer, Ferketich, May, DeJoseph & Sollid, 1988; Zimerman, 2003). Therefore, even when there is a risk that an infant will not survive until birth and/or the woman's health may be jeopardized by the pregnancy, women still experience comparable feelings of attachment to their pre-born children when compared to women who have low-risk pregnancies.

7. There is evidence that a meaningful proportion of women who plan to abort actually experience attachment to the unborn child (Allanson & Astbury, 1996; Patterson et al., 1995). In an Australian study, a significant segment of the sample of women attending an abortion clinic had fantasies about the child and engaged in attachment related emotions and behaviors, including daydreaming about what type of mother they would be (50%), talking to their unborn child (40%), rubbing their stomachs affectionately (30%), and feeling protective of the pregnancy (15%) (Allanson & Astbury, 1996).

8. In describing her experience prior to abortion, one participant in a study by Patterson et al. (1995, p. 685) stated: *"I believed in the bonding between us which was insane because anything could have happened to me…but somehow what kept me going was this – it wasn't exactly your regular kind of love, but it was a very special thing for this person (fetus)."* Similarly, a participant in a study by Keros et al. (2004, p. 2566), conveyed feelings of attachment despite the plan to abort *"…I had maternal feelings when I understood that I was pregnant…I try to convince myself that I do not want children."*

9. In a recently published study (Stålhandske, Makenzius,Tydén, & Larsson, 2012) of 499 Swedish women, who requested a first trimester abortion for an unwanted pregnancy, the researchers reported that 67% of the participants indicated they thought about the fetus as a child and 61% reported thoughts about life and death, meaning, and morality in relation to their abortion. In addition, 48% of the women sampled said they conducted or wanted to conduct a special act to mark the end of the abortion process. The following comments from participants in the study convey the strong bond many women felt to their unborn children, even though they were fully intending to terminate the pregnancy and actually went through with the abortion.

> *"Immediately when I found out I was pregnant, I felt like a mother. It felt like I had some kind of affinity with the child, and now afterwards, it feels empty".*
> *"A scary feeling of deciding over life and death, and at the same time to know that I decide over my own body… a dilemma really".*
> *"I lit a candle for the little one and asked for forgiveness, and thought that the little soul will get a chance somewhere* else".

10. The authors of this investigation noted that the results of the study *"showed that women who choose abortion do not necessarily think about the pregnancy in an impersonal manner"* and they concluded: "*Women's experiences of abortion can include existential thoughts about life, death, meaning and morality, feelings of attachment to the foetus, and the need for symbolic expression. This presents a challenge for abortion personnel, as the situation involves complex aspects over and above medical procedures and routines."*

11. Highly elaborate neural mechanisms underpin the maternal-fetal relationship, rendering this biologically driven psychological experience highly complex and potent. Research has revealed a biological basis for maternal psychological attachment to the unborn child. Specifically, oxytocin, a nanopeptide hormone, plays a vital role in the emergence of maternal attachment behavior across pregnancy and into the postpartum period (Feldman, Weller, Zagoory-Sharon, Levine, 2007; Levine, Zagoory-Sharon, Feldman, Weller, 2007). Plasma Oxytocin levels are often stable throughout pregnancy and levels early in pregnancy and in the postpartum period have been shown to be predictive of maternal bonding behaviors including gaze, vocalizations, positive affect, affectionate touch, maternal attachment related thoughts, and frequent checking on the infant (Feldman et al., 2007; Levine et al., 2007). Oxytocin is believed to play a central role in maternal bonding via stress reduction, enhanced trust, and by integration of psychological and physiological states that foster contact and feelings of calmness necessary to soothe an infant (Uvnäs-Moberg, 1998).

12. As noted by Galbally, Lewis, van IJzendoorn, and Permezel (2011) in a review article published in the Harvard Review of Psychiatry *"when a woman becomes pregnant, the Oxytocin produced by both the mother and her fetus across pregnancy is likely to be a factor influencing the motivational and affective process that is referred to as antenatal bonding."* In one of the first empirical studies addressing oxytocin levels during pregnancy, Feldman and colleagues (2007) measured oxytocin among 60 pregnant women at three points in time (during the first and third trimesters of

pregnancy and in the early post-partum period). Higher levels of oxytocin observed during the first trimester of pregnancy predicted more pronounced mother-infant bonding thoughts and behavior after birth. Women whose bodies were secreting more oxytocin early in the pregnancy were more psychologically attached to their infants. Levine and colleagues (2007) similarly demonstrated that an increase in oxytocin from early to late pregnancy predicted more significant maternal–fetal bonding behavior.

13. First pregnancies are more susceptible to termination than later pregnancies, because many young women find themselves pregnant prior to feeling ready to begin a family. However, the outcome of an abortion decision can be particularly difficult for first time mothers, as there is empirical evidence that first time mothers experience more pronounced feelings of maternal-fetal attachment than experienced mothers (Mercer & Ferketich, 1995; Pascoe, Koktailo & Broekhuizen, 1995; Zimerman & Doan, 2003).

14. Therefore, in my opinion, an abortion adversely affects MFA, which in turn results in a heightened and significant risk of adverse emotional, cognitive, behavior, and other psychological problems in response to an abortion experience.

C. Maternal Psychological Benefits of Childbirth and Maternal Loss Associated with Abortion

15. A woman whose pregnancy is terminated loses a significant opportunity to enjoy the many rewards of a uniquely satisfying relationship with her child. Motherhood enables the development of an extraordinary bond between two individuals,

incorporating the development of maternal-fetal attachment during pregnancy, as well as innumerable opportunities to love and be loved throughout one's life. Through abortion, the mother loses a relationship that is clearly one of the most, if not the most, rewarding in life. The child is unique and irreplaceable, as is the mother's relationship with that child. The violent termination of a woman's relationship with her child through the conscious choice to abort conflicts with the mother's natural role as nurturer and protector. There are two separate and distinct adverse consequences to an abortion procedure: 1) the mother loses the substantial benefit of her life-long relationship with her child; and 2) the joy of that relationship is replaced by the risk of significant psychological harm, which is realized in a minimum of 20-30% of cases.

16. In a rigorous, large-scale investigation of motherhood, which included a nationally representative sample of 2000 mothers, Erickson, (2005) reported that 81% of those surveyed were very satisfied being mothers; 84% reported a "good" or "excellent" sense of well-being; 69% felt content; and 93% indicated that the love they feel for their children is unlike any other love they have experienced. Moreover, 81% reported being a mother is the "most important thing I do." Satisfaction with motherhood was high regardless of marital status: married (88%); living as married (80%); not married and not living as married (62%).

17. There is empirical evidence demonstrating that a majority of women who are nearing the end of pregnancy are quite comfortable and content with being pregnant, even when the pregnancy was not planned. For example, when comparing 248 British women experiencing a planned pregnancy to 182 women experiencing an unplanned

pregnancy, Deave (2005) found that 87% of women, who planned their pregnancies and 79% of women who did not, reported feeling pleased or overjoyed just prior to delivery. The participants in this study were all first time mothers, residing in lower socioeconomic areas, with a mean age of 26.

18. More generally, a number of studies have shown positive psychological characteristics including an increased sense of control, feelings of serenity, self-esteem, empathy, restraint, ego resiliency (capacity for flexibility and resourcefulness in coping with stressors), and assertiveness associated with motherhood (Cowan et al., 1985; Ellison, 2005; Leifer, 1980; Palkovitz, 1996; Paris & Helson, 2002).

19. According to Ellison (2005), frequent close contact inherent in the daily care of a young child results in expanded maternal brain activity and neural growth. For example, researchers have theorized that as mothers become accustomed to attending to very small changes in their children's facial expressions and body language when they monitor and attend to their needs, brain circuits related to empathy are expanded.

20. Scientists contend that the combination of motivation, practice, and hormones give mothers intellectual strengths that they did not have prior to giving birth. There is evidence that motherhood is associated with greater efficiency and competence in completion of a number of cognitive tasks (Ellison, 2005; Kinsley & Lambert, 2006).

21. Other studies have indicated that motherhood is associated with decreased risk for negative psychological experiences. For example, in a large (n=396) study by Rokach (2004), mothers in their first year of parenting were found to score significantly lower

on 6 subscales of the Loneliness Questionnaire than a sub-sample of women drawn from the general population. The subscales included emotional distress (intense pain, inner turmoil, hopelessness, feelings of emptiness), social inadequacy and alienation (feelings of social detachment), growth and discovery (feelings of inner strength associated with loneliness), interpersonal isolation (feelings of alienation, abandonment, and rejection), and self-alienation (detachment from oneself, numbness). When compared to women from the general population, pregnant women were also found to score significantly lower on all the loneliness subscales with the exception of self-alienation.

22. There is no doubt that a pregnant mother's relationship with her child is a source of significant life-long joy and happiness. Therefore, it is perfectly justified and right for the state of North Dakota to impose protections designed to guard against arbitrary loss of that relationship by regulating abortion when a fetal heartbeat is present. In my opinion, the loss of a child through abortion also places the mother at a significantly increased risk for emotional, cognitive, behavioral and psychological problems.

D. Evidence that Maternity Does Not Block Women's Abilities to Pursue Educational and Occupational Goals

23. According to the United States Department of Labor, Bureau of Labor Statistics, women made up 46.9% of the national labor force in 2012. In addition, women comprised 51.5% of management, professional and related positions. The percentage of mothers with children under age 6 in the labor force has also risen dramatically in recent years, and in 2012 the labor force participation rate was 70.5% for mothers

with children under the age of 18. The labor force participation rate of mothers with children under 6 years (64.8%) was lower than the rate of those whose youngest child was 6 to 17 years old (75.1%). Finally, the participation rate of mothers with infants under age one was 57%.

24. There is evidence that the number of women seeking entrance into prestigious professions, such as medicine that require many years of formal education is increasing. For example, according to the American Association of Medical Colleges (AAMC), 48.3% (16,838) of medical degrees awarded in the U.S. in 2009-10 were earned by women, an increase from 26.8% in 1982-83.

25. Contemporary research indicates that not only do most mothers of young children work outside the home, but most prefer to work and employment is associated with positive outcomes for women and their children. For example, Christopher (2012) studied a group of young mothers, including women from both Canada and the U.S., with diverse backgrounds relative to ethnicity, class, and marital status. The women reported enjoying their careers, yet many indicated that they tended to place limits on how much they worked in order to remain connected to their children. A large percentage of the women sampled sought out jobs (even high-powered professionals, such as lawyers) with employers who did not require overtime or nights on a regular basis. Most of the mothers in this study further reported that they would work even if they did not have to for financial reasons.

26. In a large scale study, Buehler and O'Brien (2012) recently reported that mothers employed part-time had better overall health and fewer symptoms of depression than

stay-at-home moms, while there were no reported differences in general health or depressive symptoms between moms employed part-time and those who worked full-time. Participants were from 10 locations across the U.S. and 24% represented ethnic minorities and 14% were single parents.

27. McMunn, Kelly, Cable, and Bartley (2011) identified no significant detrimental effects on a child's long-term social or emotional development of mothers working during the child's first year of life. Carneiro, Meghir, and Parey (2013) employed a national data set and found that maternal education has positive effects on both children's cognitive skills and their behavior. These researchers also noted that more-educated mothers are more likely to work and to work for long hours: however there was no evidence that more-educated mothers engaged in less breastfeeding, spent less time reading to their children, or took their children on fewer outings.

E. Increased Risk of Adverse Psychological Outcomes Associated with Abortion Compared to Childbirth

28. The formal study of the psychology of induced abortion has gained substantial momentum over the past several decades and the scientific rigor of the peer-reviewed studies examining post-abortion mental health problems has increased dramatically. To a reasonable degree of medical and scientific certainty, the overwhelming preponderance of scientific evidence published world-wide demonstrates abortion is a substantial contributing factor in women's mental health problems.

29. Research with nationally representative samples and a variety of controls for personal and situational factors that may differ between women who choose to abort and carry to term

indicate abortion significantly increases risk for depression (Cougle, Reardon, & Coleman, 2003; Fergusson, Horwood, & Ridder, 2006; Fergusson et al., 2008; Pedersen, 2008; Rees & Sabia, 2007)**,** anxiety (Cougle, Reardon, & Coleman, 2005; Fergusson, Horwood, & Ridder, 2006; Fergusson et al., 2008), substance abuse (Coleman, 2006; Pedersen, 2007; Reardon, Coleman, & Cougle, 2004)**,** and suicide ideation and behavior (Fergusson, Horwood, & Ridder, 2006; Fergusson et al., 2008; Gissler, Hemminki, & Lonnqvist, 1996; Gissler et al. 2005), among other outcomes. There is consensus among most social and medical science scholars that a minimum of 20% of women who abort suffer from serious, prolonged negative psychological consequences (Bradshaw & Slade, 2003; Major & Cozzarelli, 1992; Zolese, & Blacker, 1992).

30. The scientific evidence is published in leading peer-reviewed journals in psychology and medicine, and there are now dozens of large scale, prospective studies incorporating different types of comparison groups and other control techniques, effectively fortifying the level of confidence in the results derived. **Exhibit B** provides a list of the most methodologically sophisticated studies published on abortion and mental health from 1980 to the present.

31. Abortion is a particularly risky choice for women with pre-existing mental illness. Moreover, there is virtually no empirical evidence documenting mental-health benefits to women with or without pre-existing mental illness, and there is a wealth of data documenting the association between abortion and mental health decline.

32. **Exhibits C(1)** contains a report of a meta-analysis I conducted titled *"Abortion and Mental Health: A Quantitative Synthesis and Analysis of Research Published from*

1995-2009." This paper was published in the prestigious *British Journal of Psychiatry* on September 1, 2011. A meta-analysis is a specific form of systematic literature review wherein quantitative data from multiple published studies are converted to a common metric and combined statistically to derive an overall measure of the effect of an exposure, such as abortion. This methodology gives the results more statistical power (due to the increased sample size) and much more credibility than the results of any individual empirical study or narrative review, such as the one conducted by the American Psychological Association in 2008. In a meta-analysis, the contribution or weighting of any particular study to the final result is based on objective scientific criteria (sample size and strength of effect), as opposed to an individual's opinion of what constitutes a strong study.

33. After applying methodologically-based selection criteria and extraction rules to minimize bias, the sample consisted of 22 studies, 36 measures of effect, and 877,297 participants (163,880 experienced an abortion). Results revealed that women who aborted experienced an 81% increased risk for mental health problems. When compared specifically to unintended pregnancy delivered, women were found to have a 55% increased risk of experiencing mental health problem.

34. Separate effects were calculated based on the type of mental health outcome, with the results revealing the following: the increased risk for anxiety disorders was 34%; for depression it was 37%; for alcohol use/abuse it was 110%; for marijuana use/abuse it was 220%; and for suicide behaviors it was 155%. Calculation of a composite Population Attributable Risk (PAR) statistic revealed that nearly 10% of the incidence of mental health problems was directly attributable to abortion.

35. Very stringent inclusion criteria were used in the meta-analysis to avoid bias. Every strong study was included and weaker studies were excluded based on the criteria. Specifically, among the rules for inclusion were a sample size of at least 100 participants, use of a comparison group, and employment of controls for variables that may confound the results, such as demographics, exposure to violence, prior history of mental health problems, etc.

36. The *British Journal of Psychiatry* is considered one of the top psychiatry journals in the world. Specifically, it has a very high Impact Factor (6.619) and it is currently the 3rd most-cited general psychiatry journal in the world based on the Institute for Scientific Information (ISI) rankings. This review offers the largest quantitative estimate of mental health risks associated with abortion available in the world. Consistent with the basic tenets of evidence-based practice, this is information that should inform the provision of abortion services. Subsequent to the publication of this meta-analysis, the well-known and highly prolific researcher, Dr. David Ferguson (2011) from New Zealand published a letter in *The British Journal of Psychiatry* after my study appeared in the journal announcing that his own independent meta-analysis was consistent with the results of my study. Please see **Exhibit C(2)** for a copy of this letter.

37. Therefore, in my opinion, women who have an abortion have a profound and significantly increased risk of adverse emotional, cognitive, behavior, mental and psychological outcomes when compared to women who do not undergo the procedure.

F. The Elevated Risk of Intimate-Partner Relationship Problems and Parenting Difficulties Associated with Abortion History

38. When women experience psychological problems associated with abortion, the effects are likely to adversely impact others around them, including intimate partners and children. This is particularly true when painful abortion-related emotions are not adequately resolved. Based on the foregoing discussion, it is my opinion that women who have an abortion experience a profound and significant increased risk of intimate partner relationships problems and parenting difficulties.

39. Many couples choose abortion based on the belief that the decision will preserve the quality of their relationship if one or both partners feel psychologically or practically unprepared to have a child (Allanson & Astbury, 1995; Bianchi-Demicelli et al., 2002). The research on this topic is somewhat limited; however, the available data reviewed below suggests the exact opposite, with abortion ushering in relationship challenges. Partner communication problems (Freeman, 1980) and an increased risk for separation or divorce following an abortion are outcomes that have been reported in several studies (Barnett, Freudenberg, & Wille, 1992; Bracken & Kasi, 1975; Freeman, 1980; Lauzon, Roger-Achim, Achim, & Boyer, 2000; Miller, 1992; Rue et al., 2004). In one study by Lauzon and colleagues (2000), 12% of women and 18% of men sampled indicated that an abortion that occurred up to 3 weeks earlier had negatively affected their relationship. Similarly, in a study led by Rue (2004), we reported that 6.8% of Russian women and 26.7% of American women identified relationship problems due to an abortion; whereas relationship benefits were reported by only 2.2% of Russian women and only .9% of American women.

40. Research has further demonstrated that women with an abortion history are at an increased risk for sexual dysfunction (Bianchi-Demicelli et al., 2002; Boesen, Rorbye, Norgaard, & Nilas, 2004; Fok, Siu, & Lau, 2006; Lauzon, Roger-Achim, Achim, & Boyer, 2000; Miller, 1992; Rue et al., 2004; Tornboen et al, 1994). In a recent review of previously published empirical studies, Bradshaw and Slade (2003) concluded that 10-20% of women experience abortion-related sexual problems weeks and months following an abortion, while 5-20% of women continue to report sexual difficulties at one year post-abortion. Male reactions to a partner's abortion have not been as extensively studied as female responses; however, post-abortion sexual problems in the first three weeks after an abortion were indicated by 18% of men, who were significantly affected by a partner's abortion (Lauzon et al, 2003).

41. Abortion initiates relationship deterioration for any of the following reasons: 1) perceptions of a partner as insensitive or insufficiently supportive; 2) negative abortion-related emotions on the part of one or both individuals; 3) altered self-perceptions which may result in feelings of estrangement from one's partner; 4) anger due to relationship-based information (e.g., commitment, long-term plans, etc.) derived through the abortion decision-making process; and/or 5) a history of unresolved grief and trauma in one or both partners.

42. Associations between abortion and problematic parenting, including lower emotional support and increased risk for child abuse and neglect, have been reported in peer-reviewed studies (Benedict, White, & Cornely, 1985; Coleman, Reardon, & Cougle, 2002; Coleman, Rue, Coyle, & Maxey, 2007; Coleman, Maxey, Coyle, & Rue, 2005; Ney, Fung, & Wickett, 1993). For example, compared to women with no history of induced abortion, those with one abortion were found to have a 144% increased risk of engaging in child maltreatment (Coleman, Rue, Coyle, & Maxey, 2007). Complicated grieving (Barr, 2007; Prigerson et al, 1999), engagement in self-destructive behaviors such as substance abuse, the elevated mental

health risks referenced above, and sleep disturbances (Reardon & Coleman, 2006; Rue et al., 2004) may contribute to problematic parenting.

43. Several additional conditions emerging in the aftermath of abortion result in feelings of detachment, limit satisfaction in parenting, and/or reduce spontaneity in parenting (Coleman, 2009). Among the specific mechanisms that help explain associations between abortion and parenting difficulties, are the following:

    a. Shame, guilt, or violation of personal moral codes, make women feel undeserving of a child's love or they may have a sense that their child does not really belong to them.
    b. Women "punish" themselves by not letting go and completely enjoying their children.
    c. If women feel as though their abortion(s) was a poor choice, they may lack confidence or a sense of personal efficacy in decision-making.
    d. Women feel judged by others and become very self-conscious in parenting.
    e. Women experience significant stress in parenting, as they attempt to become perfect mothers if the abortion detracted from their maternal identity.
    f. A biological or psychological hindering of the maternal instinct occur, because the decision to abort is diametrically opposed to the protection and nurturance, which the pregnant woman is by nature programmed to engage in.

G. Association between Risk Factors that are Suggestive of the Desire to Maintain the Pregnancy and Negative Post-Abortion Adjustment

44. In the summer of 2011, with assistance from two Bowling Green State University graduate students I completed an exhaustive search of the abortion-related psychological risk-factors literature. The MEDLINE, PubMed, and PsycINFO data bases were examined for peer-reviewed articles using combinations of the following four sets of descriptors.

    a. Therapeutic abortion, elective abortion, and induced abortion

    b. At-risk, risk-factor, predictor, susceptibility, vulnerability

    c. Pre-abortion, post-abortion

    d. Psychiatric morbidity, mental health, trauma, psychological adjustment, psychological complications, psychological distress, psychological disorders, , psychological harm, psychological problems, emotional adjustment, emotional complications, emotional distress, emotional disorders, emotional harm, emotional problems,, suicide, mood disorders, depression, anxiety, Post-traumatic Stress Disorder, substance abuse, substance use.

45. Over 400 abstracts were identified and read to assess relevance and 258 articles were ordered and examined closely. This process yielded a final list of over 120 articles examining risk factors for post-abortion psychological difficulties. From this list, 6 specific risk-factors were identified as having significant empirical support to recommend screening for during pre-abortion counseling. The list of risk factors included the following: 1) coercion or pressure from others to abort; 2) the pregnant woman views the abortion to be in conflict with her personal or religious values; 3) the pregnant woman is ambivalent about her decision to have an abortion, or finds the

decision of whether to have an abortion difficult and she has a high degree of decisional distress; 4) the pregnant women is committed to the pregnancy or prefers to carry the child to term (this includes feelings of bonding or attachment to the unborn child); 5) the pregnant woman has a medical history that includes a pre-abortion mental health or psychiatric problem; and 6) the pregnant woman is 22 years old or younger. **Exhibit D** provides a table with an exhaustive list of peer-reviewed studies documenting each of the above risk factors that was updated in the fall of 2013.

46. If women have mixed feelings about an abortion and/or feel connected emotionally to the unborn child before an abortion, then grief in the aftermath typically occurs. Kero and Lalos (2000) noted that ambivalent feelings are suggestive of the high psychological burden of abortion for many women. Ambivalent feelings regarding an abortion decision have been found to be strongly correlated with experiencing a lingering emotional connection to the unborn child after termination (Coleman & Nelson, 1998).

47. Husfeldt and colleagues (1995) reported that 44% of women surveyed had doubts about their decision to abort upon confirmation of pregnancy, with 30% continuing to express doubts when the abortion date arrived. If a woman doubts her decision to abortion and she believes it is morally wrong, guilt feelings, which are frequently implicated in depression, often arise. Guilt associated with abortion has been frequently reported (Broen et al., 2004), even in the pre-abortion counseling literature written by providers (Baker et al., 1999). Rue and colleagues' (2004) study revealed that 78% of U.S. women felt guilt in association with a past abortion. Furthermore, close to 50% of the Russian women in this study reported guilt feelings despite residing in a culture that is very accepting of abortion.

48. Kero and colleagues's (2001) work revealed that 46% of women who aborted noted that their thoughts regarding termination evoked a conflict of conscience. The source of such conflict may relate to women's commitment to the pregnancy based on an understanding of the humanity of the unborn child. In Conklin and O'Connor's (1995) study of 800 women, those who understood that unborn children are human beings experienced significantly more post-abortion negative affect and decision dissatisfaction than women who did not.

49. The decision to abort is obviously often conflict-ridden with many women seriously questioning their decision and suffering from their choice to abort. Coleman and Nelson (1998) noted that 38.7% of female college students regretted having had an aborted, and the results of a study by Soderberg and colleagues (1998) revealed that 76.1% of women who had a past abortion would never consider repeating the experience.

50. In a study employing only five screening criteria (psychosocial instability, an unstable relationship with the male partner, few friends, a poor work history, and failure to take contraceptive precautions), Belsey and colleagues (1977) found that 68% of the 326 abortion patients examined were at high risk for negative psychological reactions necessitating counseling. When assessed at 3 months post-abortion, 72% of those identified to be at high risk in the Belsey study actually had experienced negative post-abortion outcomes (guilt; regret; disturbance of marital, sexual, or interpersonal relationships; or difficulty in coping with day-to-day activities). The researchers concluded that a simple questionnaire of known risk factors could be used to identify women who are at higher risk of negative emotional reactions in order to better serve women considering an abortion.

51. Hern (1990), a well-known abortion provider, emphasized the central role of pre-abortion counseling in evaluating women's mental status, circumstances, and abortion readiness while stressing the importance of developing a supportive relationship between the counselor and

patient to prevent complications. Hern further emphasized the necessity of the counselor being trained to assess whether the abortion patient is a victim of subtle coercion.

52. Abortion counselor and consultant, Baker (1995) similarly stressed pre-abortion screening for risk factors 17 years ago in her book titled Abortion & Options Counseling. She specifically stated: *"In the cases where women do react negatively after an abortion, there appear to be predisposing factors linked to those reactions. There is enough valid research from which we can attempt to assess a client's potential for negative reactions after an abortion. Counselors can use this information by 1).screening for these factors in pre-abortion counseling and 2) following a plan of action that may potentiate the client's successful coping."* (p. 70).

53. In a chapter written for the Clinician's Guide to Medical and Surgical Abortion, Baker and colleagues (1999) provided a table of pre-disposing factors for negative reactions and the authors recommended identifying these factors prior to abortion in order to allow the provider to address the specific needs of the patients. Among the factors included were "belief that the fetus is the same as a 4-year-old human and that abortion is murder," low self-esteem, ambivalence about the decision, intense guilt and shame about the abortion, perceived coercion to have an abortion, and commitment to the pregnancy.

54. The American Psychological Association acknowledged a number of risk factors for psychological distress in their Task Force Report released in August 2008: *"Research derived from a stress-and-coping perspective has identified several factors that are associated with more negative psychological reactions among women who have had an abortion. These include terminating a pregnancy that is wanted or meaningful; perceived pressure from others to terminate a pregnancy; perceived opposition to the abortion from partners, family, and/or friends; and a lack of perceived social support from others."* (p.11) " and "*Feelings of commitment to the pregnancy, ambivalence about the abortion decision, and low perceived*

ability to cope with the abortion prior to its occurrence also predicted more negative post-abortion responses." (p. 92).

55. The literature on risk-factors for adverse post-abortion psychological consequences is well-developed and there is undisputed opinion among researchers and among many abortion providers that coercion, pressure to abort, commitment to the pregnancy, decision difficulty/ambivalence, conflict with personal values, pre-existing mental health problems, and young maternal age, in addition to other factors, place women at increased risk for mental health problems, including depression, anxiety, suicide ideation, suicide, and substance abuse.

56. In fact, a 40-year history of extensive peer-reviewed research has definitively shown that when specific physical, demographic, psychological, and situational factors are present, women are at a significantly increased risk of experiencing post-abortion mental health problems. Many of the risk factors described herein have been known to the research community for decades and have been recognized and affirmed by professional organizations. However, despite the availability of strong research documentation on risk factors and awareness by professionals, abortion providers rarely routinely screen for risk factors and counsel women at risk.

H. Results of a National Study on Predictors of Adverse Post-Abortion Mental Health Outcomes

57. Over the course of the last 18 months, I have conducted a national retrospective study of women with a history of abortion (n=987). The focus of the survey is on reproductive decision-making, counseling provided, and post-abortion adjustment. I prepared an extensive survey of more than 250 inquiries to be answered by women

who had abortions. The majority of the women who completed the survey were women who had obtained post-abortion counseling services from pregnancy help centers across the country. The women who participated were told the results would be reproduced in aggregate form and would primarily be used as the basis for peer-reviewed journal articles submissions. Data gathered is pertinent to this case and the relevant summary data are therefore described below

58. The women who completed the abortion survey were from every state in the US except for Hawaii. They ranged in age from 20 to 72. The breakdown by participant age categories was 5% between the ages of 20 and 29; 15% between the ages of 30 and 39; 28% between the ages of 40 and 49; 37% between the ages of 50 and 59; and 15% were over 60 years old. The majority of women self-identified as being White, not of Hispanic origin (85%); 8% were Hispanic; 4% were African American; and 3% represented other ethnicities. Reported annual income was $30,000 or less for 20% of the sample; $31,000 to $60,000 for 33% of the sample; $61,000 to $90,000 for 17% of the sample; and for 30% of the participants incomes were reported to be at or above $91,000. In terms of marital status, 76% were legally married; 7% were single and never married; 12% were divorced; 2% was separated; 1% was living with a partner; and 2% were widowed. The sample was generally well-educated, as 41% had earned a bachelor's degree or an advanced graduate degree, and only 2% had not completed high school.

59. Regarding the number of abortions obtained by the study participants, the range was from 1 to 9, with the majority having experienced only 1 abortion (69.8%); 19.7% had two abortions; 7.6% had three abortions, and 2.9% had 4 or more abortions. The

majority of the women sampled were 21-years-old or younger when they obtained their first abortion (70%) and the remainder was 22-years-old or older.

60. Among the women sampled, 13% reported having visited a psychiatrist, psychologist, or counselor prior to the first pregnancy resulting in an abortion, compared to 67.5% who sought such services after the first abortion. Regarding use of prescription drugs for psychological health prior to the first pregnancy that ended in abortion, 6.6% of the sample responded affirmatively, compared to 51% who reported prescription drug use post-dating the first abortion.

61. **Exhibits E and F** provide a summary of the data collected to date addressing risk factors for psychological problems as well as adverse post-abortion outcomes. As indicated by the data in **Exhibit E**, significant percentages of the women sampled reported the following: 1) pressure to abort from others generally, and specifically from abortion clinic personnel and partners; 2) the abortion was in conflict with personal values; 3) decision difficulty; and 4) commitment to the pregnancy prior to termination. The data outlined in **Exhibit F** illustrates the fact that women who abort experience a wide range of adverse psychological consequences and for a large percentage of women, the adverse consequences persist for 6 years or more.

I. Relative Risk of Death Associated with Abortion Compared to childbirth

62. On the Planned Parenthood National website (www.plannedparenthood.org), the following information is provided *"In extremely rare cases, very serious complications may be fatal. The risk of death from childbirth is 11 times greater than*

the risk of death from an abortion procedure during the first 20 weeks of pregnancy. After 20 weeks, the risk of death from childbirth and abortion are about the same." These statistics are derived from information published by the National Center for Health Statistics (NCHS), which provides maternal mortality information, and the Center for Disease Control (CDC), which provides abortion mortality statistics. However, merging data from these two agencies is problematic, because very different methods of data collection are employed and both systems, particularly the CDC, are prone to missing a large percentage of deaths. According to the World Health Organization: **"***Maternal deaths are hard to identify because this requires information about deaths among women of reproductive age, pregnancy status at or near the time of death, and the medical cause of death. All three components can be difficult to measure accurately."* Details regarding the unreliability of these statistics are provided below.

63. The International Classification of Diseases (ICD-9) defines maternal death as one that occurs during pregnancy or within 42 days of the termination of pregnancy (via delivery or abortion, spontaneous or induced) from any cause related to or exacerbated by the pregnancy or its management, not including accidental or incidental causes. Suicide, unintentional injuries, or homicide are therefore not included.

64. When a death is violent, a recent birth may not be recorded and a recent abortion is even less likely to be mentioned. Suicide deaths are rarely, if ever, linked back to abortion in state reporting of death rates. Further, suicides are often not recorded on

death certificates. Providing insight into the magnitude of the problem, Horon (2005) reported that U.S. physicians fail to report a recent or current pregnancy on a minimum of 50% of death certificates. As noted by Gissler and colleagues in 2004, without data linkage to complete pregnancy and abortion records, 73% of all pregnancy associated deaths could not be identified from death certificates alone.

65. Coding rule 12 of the ICD-9 required deaths due to medical and surgical treatments be reported under the complication of the procedure (e.g., infection) rather than the treatment (e.g., elective abortion). Therefore, even when a surgical complication of abortion is the direct cause of death, the death certificate will typically not contain this vital information.

66. Most women leave abortion clinics within hours of the procedure and go to hospital emergency rooms if there are complications. The data reported by abortion clinics to state health departments and ultimately to the CDC therefore under-represents abortion morbidity and mortality.

67. The majority of deaths due to childbirth are the result of conditions and age that do not apply to the average young healthy pregnant women who most typically present for abortions. The maternal mortality statistics replied upon by the Plaintiffs include deaths due to uncommon conditions and advanced age, and thereby overstate the risk of death associated with carrying to term for most women

68. Many studies have demonstrated that childbirth is protective both in the immediate and long-term against death from non-obstetrical causes (i.e., from natural causes

such as breast cancer and unnatural causes including suicide) (Appleby, 1991; Carroll, 2007; Daling et al., 1994; Marzuk et al., 1997; Thorp et al., 2003). For example, Appleby (1991) reported that pregnant women were 1/20th as likely to commit suicide when compared to non-pregnant women of childbearing age. Similarly, Marzuk and colleagues (1997) reported a standardized mortality ratio of .33 for pregnant female residents of New York.

69. In 2005, South Dakota passed an Informed Consent Statute, which became the subject of litigation between Planned Parenthood, Minn., ND, SD and Dr. Carol Ball as Plaintiffs and the Governor and Attorney General as Defendants, and Alpha Center and Rapid City CareNet as Intervenors. I provided expert testimony in that case. The 2005 Statute required Plaintiffs to disclose the fact that an abortion places a woman at an increased risk of suicide and suicide ideation. This case was litigated to a conclusion and an *en banc* court of the US Court of Appeals ruled that it was constitutional for South Dakota to require the disclosure, because it was a true statement of medical and scientific fact. That decision is reported as *Planned Parenthood et al v. Rounds et al, 686 F.3d 889 (8th Cir. 2012) (en banc).*

70. Finally, I recently published a 25 year record-linkage study (Coleman et al., 2012) using Danish population-based data collected between 1980 and 2006. The study was undertaken to provide reliable data pertaining to the relative risk of death associated with distinct reproductive history patterns over many years. Large studies like this one, containing complete reproductive history data and data related to deaths, provide

a unique opportunity to bypass many of the limitations of the currently available maternal mortality data in most countries.

71. The study population included all women in Denmark born between the years 1962 and 1993, who were alive on January 1st 1980 and did not die prior to age 16 (n=1,001,266). For the full population, the average number of pregnancies per woman was 1.23 (SD=1.61). There were 5,137 recoded deaths occurring at a mean age of 27.4 years (SD=7.30).

72. With age at last pregnancy and the number of pregnancies controlled along with year of birth, compared to the birth only group, the induced abortion only group was associated with a 66% increased risk of death. In a second set of analyses, the impact of repeated abortions after controlling for other forms of loss, age at last pregnancy, and year of birth was examined with the reference group being women who had not experienced an induced abortion, Two abortions resulted is moderately high increased risk of death (114%), with 3 or more induced abortions associated with an 191.7% increased risk of death.

73. As we note in the article: *"The primary strengths of the study are the use of large scale population level data that includes reliable records on all possible reproductive outcomes and prospectively gathered data from different birth cohorts of women. The results of comprehensive studies of this nature offer more accurate information regarding mortality risks associated with reproductive outcomes than the data acquired by governmental agencies relying on information primarily garnered from death certificates."*

74. Our results are comparable to other record-based studies. In a record-based study by Reardon and colleagues, U.S. women who aborted, when compared to women who delivered, were 62% more likely to die over an 8 year period from any cause after adjustments were made for age. Further, consistent findings were reported in large Finnish population-based studies by Gissler and colleagues published in 1997 and in 2004. In the first study, post-pregnancy death rates within 1 year were reported to be nearly 4 times greater among women who had an induced abortion (100.5 per 100,000) compared to women who carried to term (26.7 per 100,000). Spontaneous abortion had a pregnancy associated mortality rate of 47.8 per 100,000. In the later study, Gissler and colleagues again found that mortality was significantly lower after a birth (28.2 per 100,000) than after a spontaneous abortion (51.9 per 100,000) and following an induced abortion (83.1 per 100,000). Gissler and colleagues pointed out in 2005: *"Elevated mortality risk after a terminated pregnancy has to be recognized in the provision of health care and social services"* (p. 462).

75. Raymond and Grimes (2012) published a US study reporting that women were about 14 times more likely to die during or after giving birth to a live baby than to die from complications of an abortion. In arriving at their conclusion that abortion is many times safer than childbirth, Raymond and Grimes relied on data from the Center for Disease Control (CDC) to secure numbers of deaths related to childbirth and induced abortion. The authors acknowledged underreporting, but they made no attempt to address the factors associated with this shortcoming, nor did they discuss the

magnitude of the problem: *"Weaknesses include the likely under-reporting of deaths, possibly differential by pregnancy outcome (abortion or childbirth.)"*

76. Raymond and Grimes also failed to address abortion-related deaths beyond the first trimester, which constitute 12-13% of all abortions performed in the US. Using national U.S. data spanning the years from 1988 to 1997, Bartlett and colleagues reported the relative risk of mortality was 14.7 per 100,000 at 13–15 weeks of gestation, 29.5 at 16-20 weeks, and 76.6 at or after 21 weeks.

77. In the Plaintiff's Memorandum of Law submitted in support of their motion for summary judgment in this case, the Plaintiffs claim that a woman's right to terminate a pregnancy prior to viability is protected by the Due Process Clause of the 14th Amendment to the Constitution. Citing to *Planned Parenthood v. Casey* and *Lawrence v. Texas*, they take the position that women who carry to term are subject to anxieties as well as burdensome physical and employment limitations that preclude women's abilities to shape their own futures and contribute to the social and economic life of the nation. Personal control of women' reproductive lives is postulated to be the key to equality between the sexes. Based on the review of research described above, this position is patently incorrect as it is outdated and inconsistent with the best science available.

78. In my opinion, the following conclusions can be drawn: 1) women's psychological and physical health are at greater risk when abortion is chosen over childbirth; 2) motherhood is a profound biological and psychological experience that begins early in pregnancy and clearly enhances women's well-being and life satisfaction; and

finally, 3) contemporary women do not need to end the lives of their pre-born children in order to benefit from active participation in stimulating careers and in the broader community. Women should never feel as though they must choose between a career and a child who has already been conceived, and the economic and social realities of today render such a choice unnecessary. True equality for women is achieved when they, like men, are able to have it all, children and a career.

III. Summary

79. In summary, it is my opinion that an abortion has a significant and profoundly adverse effect on the mental, emotional, cognitive and psychological health, safety, and overall well-being of women. Therefore, in my opinion HB 1456 protects women from these adverse effects of an abortion and in turn promotes the health, safety and well-being of women, along with protecting the life of unborn children, and is medically and scientifically sound and reasonable.

IV. Expert Testimony:

Fees and Recent Experience

5. Fees for expert services: $250 per hour for all in-office work, including record review, attorney consultation, client interviews, scientific literature searches, report-writing, affidavit construction, and testimony preparation; $2500 per day for depositions and courtroom testimony; and $500 per day for travel time.

6. List of cases in which I was deposed or testified at trial as an expert witness between 2009 and 2013:

   a. Expert witness on behalf of the Alpha Center, Sioux Falls, SD, and CareNet of Rapid City, SD, interveners in defense of South Dakota HB 1217. My report will be submitted as an expert jointly for these Intervenors and the State Defendants. (August 2011 – Present)
   b. Expert witness for the Plaintiffs, Zallie v. Brigham, Camden, NJ (August, 2007-2011).
   c. Expert witness for the Plaintiffs, Roe et al. v. Planned Parenthood, Cincinnati, OH (2006-2010).
   d. Expert witness for the Intervenors in Planned Parenthood Minnesota, North Dakota, South Dakota, and Carol E. Ball, M.D., Plaintiffs, v. Mike Rounds, Governor, and Larry Long, Attorney General, Defendants Civil Case No.: 05-4077. (2005-2012).

I declare under penalty of perjury that the foregoing is true and correct.

Dated this 2nd day of December, 2013

Priscilla K. Coleman, Ph.D.

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